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ABSTRACT

This study examined the effects of early vs. extended mother-infant contact on infant, maternal and interactional outcomes in the lying-in period for 104 lower class mother-infant dyads. The early contact treatment consisted of placing the mother and neonate together for 10 to 45 minutes within the first 3 postpartum hours. The extended contact treatment provided mother-neonate contact in a rooming-in situation for approximately 10 hours per day of the lying-in period. Utilizing a 2 (early contact) x 2 (extended contact) x 2 (sex of the infant) unequal cells factorial design, 104 lower class primiparas and their health, full-term neonates were assigned to one of eight possible cells in a manner as unbiased as hospital contraints would permit. Because sex effects were slight and insignificant to the data reported here, the design was collapsed into a 2 (early contact) x 2 (extended contact) and analyzed as othogonal contrasts. Dependent variables included observations of mothers and infants during the fourth and fifth lying-in feedings. In addition, was evaluated using the Brazelton Neonatal Behavioral Assessment Scale and mothers were given a multiple-choice questionnaire on their infant's temperament. Results for infant, maternal and interactional variables supported the importance of immediate postpartum contact between mother and infant in facilitating mother-infant adaptation. Some support was also provided for extended postpartum mother-infant contact. (Author/JMB)

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Postpartum Early and Extended Contact: Quality, Quantity or Both?

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ABSTRACT

Research regarding the early mother-infant relationship has focused on early postpartum contact. Previous results indicate that early mother-infant contact can affect maternal behavior in ways favorable to the infant's development. The present study examined the effects of early vs. extended mother-infant contact on infant, maternal and interactional outcomes in the lying in period for 104 dyads. Results for infant, maternal and interactional variables supported the importance of immediate (first 3 hours) postpartum contact between mother and infant in facilitating mother-infant adaptation. Some support was also provided for extended (rooming-in) postpartum mother-infant contact. Results are discussed in terms of a transactional model of early mother-infant adaptations. Results also implicate the interaction between assessment technique and choice of dependent variables.

Research regarding early mother-infant relationships has focused on the early postpartum period. Increased opportunity for mother-infant contact closely following birth has yielded evidence supporting the early postpartum period as a time conducive to the development of strong maternal attachment (e.g., Kennell and Klaus, 1976). Ainsworth and Bell (1973) have hypothesized a relationship between attachment and maternal sensitivity, and increased maternal sensitivity to infant needs as a function of extended mother-infant contact has been reported (Greenberg, Rosenberg & Lind, 1973).

Though the time following birth is of apparent significance to the formative mother-infant relationship, research in early postpartum contact has confounded time as a qualitative variable (time of contact) with time as a quantitative variable (duration of contact). The present design differentiates between these aspects of temporality by treating qualitative time (early contact) and quantitative time (extended contact or rooming-in) orthogonally. Furthermore, previous research on postpartum contact has focused primarily on maternal behavior while largely ignoring infant behavior and mother-infant interaction. Thus, there has been little opportunity to understand the process underlying early mother-infant attachment. This study, conceptualized within transactional framework (Sameroff, 1975), examined effects of postpartum contact on maternal behavior, infant behavior and mother-infant interaction.

Method. The qualitative treatment (early contact) consisted of placing the mother and neonate together for a period ranging from 10 to 45 minutes within the first three postpartum hours. The quantitative treatment

(extended contact) provided mother-neonate contact in a rooming-in situation for approximately 10 hours per day of the lying-in period. Utilizing a 2 (early contact) x 2 (extended contact) x 2 (sex of the infant) unequal cells factorial design, 104 lower class primiparas and their health, full-term neonates were assigned to one of eight possible cells in a manner as unbiased as hospital constraints would permit. Because sex effects were slight and insignificant to the data reported here, the design was collapsed into a 2 (early contact) x 2 (extended contact) and analyzed as othogonal contrasts.

Dependent variables included observation of mother-infant interaction during the fourth or fifth lying-in feeding and recording mother-infant behavior. Infant behavior was evaluated using the Brazelton (1973) Neonatal Behavioral Assessment Scale when the infants were 42-54 hours old and data from feeding observations. Finally, maternal behavior was examined in the context of the feeding observation data and responses to a multiple choice questionnaire of her intant's temperament (Carey, 1973).

Regarding the feeding observation, mother-infant codes were defined in terms of five classes: setting, infant state, maternal proximity, maternal behavior, and infant behavior using an observation system designed by Strain and Vietze (Note 1) with some modifications for neonates. Each category was parcelled into mutually exclusive and exhaustive components and assigned a numerical code (see Appendix A). Infant state was characterized according to the states of the Brazelton (1973) Neonatal Behavioral Assessment Scale and the enface (Klaus, Jerauld, Kreger, McAlpine, Steffa, and Kennell, 1972) condition was added to maternal proximity codes.

Coded behaviors were recorded via magnetic tape utilizing Datamyte (model DAK-8C) portable observation units. The Datamyte also recorded

the time of each entry in 1-second increments; thus, the dyadic interaction was recorded as a timed sequence. Following the observation session, the magnetic tapes were fed directly into computer memory.

Results. Generally, results were found to fit the qualitative model, the model which contrasted between dyads receiving and not receiving the early contact treatment. Analysis of neonatal behavior revealed that the initial state of infants who received the early contact treatment was lower during the neonatal assessment and that early contact infants' predominate states remained lower throughout the course of assessment (see Table 1). Using the a priori dimensions described by Als and associates (Als, Tronick, Adamson and Brazelton, 1976) to summarize Brazelton assessment data, no diferences were found between treatments

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Insert Table 1 about here

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with regard to interactive processes, motor processes, or organizational processes. However, it was found that infants receiving initial contact demonstrated better physiological stability in response to stress, X^2 (1) = 6.05, $p < .05$. Additionally, for infants demonstrating particularly poor performance, those which received the early contact treatment tended to be difficult to arouse from sleep states while infants not receiving early contact were labile, X^2 (1) = 6.3, $p < .05$.

Maternal reports of infant temperament indicated that infants of dyads receiving initial contact were perceived by their mothers as less distractible (F (1,30) = 4.33, $p < .05$). Interaction observation data revealed that the predominant infant behaviors fell under the operational definitions "visual" (visual attention to mother) and "none" (no communicative behaviors, see Appendix A). Early contact infants exhibited less

visual and more none behaviors than infants of dyads not receiving early contact (see Table 2).

Insert Table 2 about here

Of all caregiving settings, the mothers of both treatment groups spent the most time in the condition of "feed+" (mother's eyes on a plane with infant's, bottle perpendicular and nipple full); however, mothers in dyads receiving early contact showed a greater proportion of the observation period in this condition (see Table 3).

Insert Table 3 about here

By collapsing across specific behavior codes such as smile, vocalize and visual it became possible to analyze the interaction data in terms of the general response pattern of the mother-infant behaviors. Utilizing a procedure suggested by Bakeman and Brown (in press) a transitional matrix was constructed which included all mother behavior and all infant behavior events. Within this framework there existed four possible interactions: BR, both mother and infant responding simultaneously; MR, mother alone responding; IR, infant alone responding; NR, neither mother nor infant responding.

Analysis of the proportion of time spent in these four conditions showed that dyads receiving early contact spent less time in the condition where both were responding simultaneously (BR) and more time in the condition where mother only was responding (MR) (see Table 4). In terms

Insert Table 4 about here

of the transitional probabilities among the four possible responding patterns, dyads receiving early contact showed a lower probability of maintaining both simultaneous responding (BR) and infant only responding (IR) from time t to time t+1 (see Table 5).

Insert Table 5 about here

To summarize the data thus far, dyads receiving early exposure were differentiated from those not receiving that treatment by direct assessment of the infant, maternal report, and mother-infant interaction observation. These infants exhibited a lower level of arousal, manifested fewer stress responses, and, when showing particularly poorly were more likely to appear depressed rather than labile. Maternal reports indicated that they perceived their infants as less destractible. The mother-infant interaction was characterized by the optimal feed+ setting while the infant displayed less visual behavior and more of the relatively inactive behavior operationally defined as none. The predominant response pattern of the dyad was that of mother only (MR) responding in comparison with the simultaneous responding (BR) which was disproportionately higher in dyads not receiving early contact. Finally, there was a lower probability of either simultaneous responding (BR) or infant responding (IR) persisting from time t to t+1. Overall, these data created a picture of the early contact dyad as a relatively calm, non-reactive infant who was efficiently fed and cared for by his or her mother.

At this point, however, the picture becomes more complicated. Though the majority of the findings support the qualitative model as represented by early mother-infant contact, some maternal perceptions of infant

temperament showed effects in favor of the quantitative model as represented by extended contact. Mothers of dyads receiving the extended contact treatment reported lower activity in their infants (F (1, 42) = 7.31, $p < .01$). Also, it was hypothesized that the number of items a mother completed on the infant temperament survey would reflect her investment, interest, and knowledge of her infant. There proved to be a wide range of items completed. Many did not complete the first question while a few completed the entire survey. Though there were no differences between treatments with regard to those who completed no items, mothers of the extended contact dyads completed more items on the infant temperament survey (F (1,42) = 4.63, $p < .05$).

In the absence of these data from the questionnaire given to mothers, inference would have led to the qualitative model. Infant, mother, and mother-infant interaction data converged very nicely to form a picture of a relatively calm, non-reactive infant who was efficiently fed and cared for by his or her mother. However, data from maternal perceptions also showed effects in favor of the quantitative model.

The findings of this study suggested that mother-infant contact within the first three hours following birth resulted in both maternal and infant behaviors which maximized the feeding situation. Further, the data indicated that early and extended contact were differentiable and that evidence for effects were related to choice of dependent variable.

This study has produced further evidence for the complex nature of the relationship between neonate and mother. In addition, the findings appear in agreement with the sensitive period hypothesis. However, until data collected from the first lying-in feeding and the first well-baby clinic can be analyzed, further interpretation of the data reported here would be

premature. Perhaps the continuum of the first 30 days of life will provide the context within which the meaning of early contact and extended contact for mother, infant, and their relationship together can be better understood.

Reference Notes

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Table 1*

Mean States from the Neonatal Behavioral Assessment Scale for Infants Receiving Initial Contact and No Initial Contact

Assessment	Group		F	p
	No IC[a]	IC[b]		
Initial State	2.69	1.83	8.99	.004
Lowest Predominate State	3.78	3.25	8.71	.004
Highest Predominate State	5.31	4.61	12.06	.001

[a] $n = 45$

[b] $n = 36$

*NOTE: Initial Contact = Early Contact.

Table 2*

Mean Proportion of Interaction Observation Occupied by Infants in the Visual and None Categories of Infant Behavior

	Initial Contact[a]	No Initial Contact[b]
Infant Visual	.09[c]	.28
Infant None	.90	.69

[a] $n = 33$

[b] $n = 43$

[c] Newman-Keuls Multiple Comparison: $.09 < .28 < .69 < .90$, $p < .05$.

*NOTE: Intial Contact = Early Contact.

Table 3*

Mean Proportion of Time Spent in Three Setting Conditions by Mother-Infant Dyads During an Observation of the Fourth/Fifth Lying-In Feeding

	Initial Contact[a]	No Initial Contact[b]
Cradle/Rock	.05[c]	.12
Caretake	.10	.15
Feed+	.49	.38

[a] $n = 33$

[b] $n = 43$

[c] Newman-Keuls Multiple Comparison: .05 = .10 = .12 = .15 < .38 < .49, $p < .05$.

*NOTE: Initial Contact = Early Contact.

Table 4*

Newman-Keuls Multiple Comparisons of Mean Proportion of Time Spent in Both Mother and Infant Responding (BR) and Mother Alone Responding (MR) During an Observation of the Fourth/Fifth Lying-In Feeding

	Both Mother and Infant Responding (BR)	Mother Alone Responding (MR)
Initial[a] Contact	.09[c]	.85
No[b] Contact	.28	.66

[a] $n = 33$

[b] $n = 43$

[c] Newman-Keuls Multiple Comparisons: .09 < .28 < .66 < .85, $p < .05$.

Table 5*

Newman-Keuls Multiple Comparisons of the Mean Transitional Probabilities of Both Mother and Infant Responding (BR) and Infant Alone Responding (IR) During an Observation of the Fourth/Fifth Lying-In Feeding

	Both Mother and Infant Responding (BR)	Infant Alone Responding (IR)
Initial[a] Contact	.22[c]	.16
No[b] Contact	.55	.25

[a] $\underline{n} = 33$

[b] $\underline{n} = 43$

[c] Newman-Keuls Multiple Comparisons: $.16 = .22 = .25 < .55$, $p < .05$.

*NOTE: Initial Contact = Early Contact.

APPENDIX A

Behavioral Sequence Coding

I. Setting Codes

Cradle/fondle/pat/rock to calm or induce sleep	1-0
Bathe/diaper/dress (general caretaking)	1-1
Burp/break/relax from feeding	1-2
Feeding (enface, bottle perpendicular, nipple full)	1-3
Feeding	1-4
No caretaking/attending	1-5
None of the above patterns	1-6

II. Infant State Codes

Sleep with movement	2-2
Groggy, partially awake	2-3
Awake and alert	2-4
Fussy and fidgeting	2-5
Crying	2-6
Sound asleep	2-1

III. Maternal Proximity Codes

Distal (arm's length) contact	3-1
Proximal (side by side) contact	3-2
Between 2 and 4 (e.g., in lap, across stomach)	3-3
Baby lying in crook of mother's arm against mother's body	3-4
enface	3-5
No contact	3-0

V. Maternal Behavior Pattern Codes

Vocalize	5-1
Look at infant	5-2
Look at infant/smile	5-3
Vocalize/look at infant	5-4
Vocalize/look at infant/smile	5-6
Vocalize/tactile stimulation	5-7
Look at infant/smile/tactile stimulation	5-8
Vocalize/look at infant/smile/tactile stimulation	5-9
Tactile stimulation	5-0
None of the above patterns	5-5

VI. Infant Behavior Pattern Codes

Vocalize	6-1
Look at mother	6-2
Vocalize, look at mother	6-4
Distress vocalization	6-5
Distress vocalization/look at mother	6-0
None of the above patterns	6-6

Note. Adapted from Strain and Vietze (Note 2) by Hopkins.